REMARKS

The Examiner rejected the amendment filed on October 18, 2004 as non-compliant for failing to comply with the requirements of 37 CFR 1.121(c) because it incorrectly listed claim 32 and claim 33 as withdrawn in the claim listing. Applicant has corrected the status identifier of claim 32 and claim 33. Claim 32 has been cancelled and claim 33 no longer depends from a non-elected claim. Applicant believes this response is in complete compliance with 37 CFR § 1.121(c).

Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow. Following amendment, claims 1, 3-22, 24-31 and 33-54 are currently pending in the application. Claims 1, 18-22, 26, 27, 31, 33, 39, 43 and 49 have been amended. Claim 2, claim 23, and claim 32 are requested to be cancelled. Claims 52-54 have been added. Claims 22-31, 34-38, and 46-51 have been withdrawn. Claims 1-21, 33, and 39-45 were examined on the merits.

This amendment adds, changes and/or deletes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier. Support for the claim amendments can be found throughout the specification.

Applicant believes that the present application is now in condition for allowance, thus favorable reconsideration of the application as amended is respectfully requested.

I. Finalization of Restriction Requirement

Regarding the finalization of the restriction requirement in the Office Action, applicant reserves the right to rejoin the method claims of Group II upon the allowance of the claims of Group I pursuant to M.P.E.P. § 821.04. Applicant respectfully directs the Examiner's attention to § 821.04 of the M.P.E.P. which states, with respect to rejoinder,

> However, if applicant elects claims directed to the product, and a product claim is subsequently found allowable, withdrawn process claims which depend from or otherwise include all the limitations of the allowable product claim will be rejoined.

> Where the application as originally filed discloses the product and the process for making and/or using the product, and only claims directed to the product are presented for examination, when a product claim is found allowable, applicant may present claims directed to the process of making and/or using the patentable product by way of amendment pursuant to 37 C.F.R. 1.121. In view of the rejoinder procedure, and in order to expedite prosecution, applicants are encouraged to present such process claims, preferably as dependent claims, in the application at an early stage of prosecution. Process claims which depend from or otherwise include all the limitations of the patentably produce will be entered as a matter of right if the amendment is presented prior to final rejection or allowance.

In light of this section of the MPEP, certain claims of Group II, although presently withdrawn, have been amended to keep them in line with the amendments to the product claims. Applicant respectfully contends that the claims of Group II must be rejoined with the claims of Group I if the products of claim 1 should be found allowable. For this reason, applicant has not cancelled these claims from the present application.

II. Priority

Applicant acknowledges that claims 1 and 3-21 of the instant invention have been accorded a filing date of January 31, 2002. Nevertheless, applicant disagrees with the Examiner that claims 39-45 should not be able to claim priority to the provisional patent application. Therefore, applicant submits that claims 39-45 should be afforded a priority date of March 21, 2001, the filing date of Provisional Patent Appl. No.: 60/278,465.

III. Claims

A. Claim Objections

The Examiner objected to claims 32 and 33 for being dependent on a non-elected claim. Claim 32 has been cancelled and claim 33 has been amended so that it no longer depends from a non-elected claim. Therefore, applicant believes that the Examiner's objections to the

claims have been overcome. Applicant respectfully requests the Examiner withdraw the rejection.

B. Claim Rejections

i. 35 U.S.C. § 112

a. 35 U.S.C. § 112, second paragraph

The Office Action rejected claims 3-17, 21 and 39-45 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant respectfully traverse.

Claims 3-17 were rejected based on the Examiner's belief that "[i]t is unclear how claims 3-17 further limit claim 1." The Examiner further stated that it is unclear if the dependent claims "include SEQ ID NO: X and SEQ ID NO: Y having one or more conservative amino acid substitutions." Claim 1 has been amended so that it no longer allows for conservative amino acid substitutions. Therefore, it is clear that claims 3-17 currently only refer to the specific sequence claimed. In light of this, applicant submits that claims 3-17 are clear as written and requests that the rejection of claims 3-17 under 35 U.S.C. § 112, second paragraph, be withdrawn.

In the Office Action, claim 21 was rejected because the Examiner stated that "it is unclear how 'consisting essentially of' differs from comprising." Applicant is confused by the Examiner's rejection. M.P.E.P. § 2111.03 states that "comprising ... does not exclude additional, unrecited elements or methods" and that "'consisting essentially of' limits the scope of a claim to the specified materials or steps and 'those that do not materially affect the basic and novel characteristic(s)' of the claimed invention." Emphasis in original. M.P.E.P. § 2111.03 clearly states that "a 'consisting essentially of' claim occupies a middle ground between closed claims that are written in a 'consisting of' format and fully open claims that are drafted in a 'comprising' format." Because the two transitional phrases are recognized as distinct by the M.P.E.P., they should be recognized as distinct by the Examiner. Applicant thereby requests the Examiner withdraw the 35 U.S.C. § 112, second paragraph rejection as applied to claim 21.

Claim 39 was rejected for the inclusion of the phrase "immunogenic molecule," which the Examiner states "cannot be determined without reference to the host experiencing the immunogenicity." Claim 39 has been amended to remove the phrase "immunogenic molecule"

and replace it with the phrase "tumor-associated antigen." Support for this amendment can be found in paragraphs [0016] and [0101]. The Examiner stated that for purposes of examination, the claim was read with the provisio that the peptide "does not bind to a cancer-associated antigen on the surface of the cell." Applicant believes the amendment overcomes the Examiner's rejection to Claim 39 and respectfully requests that claim 39, as amended, be allowed to issue.

In the Office Action, claim 43 was rejected because the recitation of "accessory molecule" in claim 43 lacks antecedent basis and because the Office Action stated that the "difference between a 'tag molecule' and an 'identification molecule'" could not be discerned. First, the Examiner was correct to read claim 43 as dependent upon claim 42. Claim 43 has been amended to correctly depend from claim 42 and to remove the phrase "identification molecule." In light of the amendments to claim 43, applicant respectfully requests the rejection be withdrawn and the claim be allowed to issue.

b. 35 U.S.C. § 112, first paragraph

Claims 1, 21 and 39-45 were rejected in the Office Action under 35 U.S.C. § 112, first paragraph as failing to comply with the written description requirement. The Office Action states that the claims contain "subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention." The Examiner states that the claimed genus is "not limited by functional attributes of the individual species. Thus, the genus is highly variant encompassing proteins and peptides which have no amino acid sequence similarity to the described SEQ ID NO: 1-23 or 26-31 and which have functional characteristics which differ from those of SEQ ID NO.: 1-23 or 26-31." First, claims 1 and 21 have been amended so that they no longer cover amino acids having one or more conservative amino acid substitutions. Therefore, in relation to claims 1 and 21, this rejection has been rendered moot.

However, new claims 52 and 53 provide for an isolated polypeptide comprising a sequence selected from one of SEQ ID NOS.: 1-23 having one or more conservative amino acid substitutions; or SEQ ID NOS.: 26-31 having one or more conservative amino acid substitutions, wherein the one or more conservative amino acid substitutions do not decrease the biological activity of the isolated polypeptide as compared to a non-conservative amino acid substituted

polypeptide from which an amino acid substituted polypeptide derives. With the addition of the functional limitation to claim 52, claim 52 clearly describes the claimed variant genus. Support for this functional limitation can be found in the specification as originally filed at paragraph [0052], which states that "[g]uidance in determining which amino acid residues can be substituted, inserted, or deleted without abolishing biological activity can be found using computer programs well known in the art, for example LASERGENE software (DNASTAR Inc., Madison, Wisconsin)." Because one of skill in the art would reasonably conclude that the applicant was in possession of the genus claimed in amended claims 1 and 21 and new claim 52 at the time of filing, the 35 U.S.C. § 112, first paragraph rejection should be withdrawn and the claims should be allowed to issue.

The Examiner rejected claims 39-45 under 35 U.S.C. § 112 as encompassing a highly variant genus of proteins, "which do not have common structural or functional attributes." Claim 39 has been amended to provide for an isolated polypeptide that "binds preferentially to a surface of a cancerous blood cell and does not bind to the surface of a non-cancerous blood cell or binds preferentially to a surface of a non-cancerous blood cell and does not bind to the surface of a cancerous blood cell with the proviso that the peptide does not bind to a tumor-specific antigen." The claim as amended to include the functional limitation can be supported by the specification as filed, namely paragraphs [0020], [0025] and [0047]. Because all peptides must bind preferentially either to a surface of a cancerous blood cell and not to the surface of a non-cancerous blood cell or to a surface of a non-cancerous blood cell and not to the surface of a cancerous blood cell to be included in the genus, claim 39 satisfies the requirements of 35 U.S.C. § 112, first paragraph. In light of this, applicant requests the Examiner withdraw the rejection to claim 39 and allow the claim to issue. Because claims 40-45 either depend directly or indirectly from claim 39, these claims also satisfy 35 U.S.C. § 112, first paragraph and should be allowed to issue.

ii. 35 U.S.C. § 102

The Examiner rejected claims 39, 40, 44, and 45 under 35 U.S.C. 102(b) as anticipated by the abstract of Nakaya *et al.* (Biochemistry International, 1985, Vol. 10, pp. 619-626) or the abstract of Ajinomoto (EP 210,461). Applicant respectfully traverses. A *prima facie*

case of anticipation under 35 U.S.C. § 102 requires that a single reference teach each and every element of the claimed invention. M.P.E.P. § 2131. The present invention as defined, e.g., by amended claim 39, distinguishes over the cited references by reciting "an isolated peptide comprising a binding region which binds preferentially either to a surface of a cancerous blood cell or to a surface of a non-cancerous blood cell with the proviso that the peptide does not bind to a tumor-specific antigen on the surface of the cancerous or non-cancerous blood cell." As neither Nakaya *et al.* or Ajinomoto teach this element of the claimed invention, applicant respectfully asserts that a *prima facie* case of anticipation based on these two references has not been established.

Nakaya *et al.* disclose a differentiation factor produced in culture medium, which can be isolated from the conditioned medium. Ajinomoto simply teach a differentiation factor capable of differentiating and maturing mouse leukemia cells into normal cells. The factors disclosed in these two references are clearly different than a peptide that can preferentially bind to a surface of a cancerous blood cell or to a surface of a non-cancerous blood cell. One of skill in the art can clearly foresee the advantages that exist with a peptide capable of specifically binding to a certain cell population. For example, as stated in the specification, binding to a cell surface allows the peptides of the present invention to be used for "separating specific cell types from mixed cell populations (leukemic or normal) using solid state methods (columns or panning), flow cytometry or magnetic beads." Specification paragraph [0060]. Unlike the peptides of the present invention, the differentiation factors disclosed in Nakaya *et al.* and Ajinomoto have not been shown to preferentially bind to the surface of a cancerous blood cell and not to the surface of a non-cancerous cell or preferentially bind to the surface of a non-cancerous blood cell and not to the surface of a cancerous blood cell. Because the two references cited by the Examiner do not teach or suggest every element of presently amended claim 39, they cannot anticipate the claim. As claims 40, 44 and 45 depend from claim 39, the Nakaya *et al.* and Anjinomoto references also fail to anticipate these claims. Because the Examiner has failed to make a *prima facie* case of anticipation, applicant respectfully requests the rejection be withdrawn and claims 39, 40, 44 and 45 be allowed to issue.

In the Office Action, claims 39, 40 and 45 were rejected under 35 U.S.C. § 102(b) as anticipated by Steube *et al.* (Leukemia, 1992, vol. 6, pp. 1048-1053). Applicant respectfully submits that the Examiner is reading more into Stuebe *et al.* than is warranted from the short abstract provided with the present Office Action. Applicant respectfully submits that the Examiner has failed to make out a *prima facie* case of anticipation because Steube *et al.* fails to teach or disclose every element of the claimed invention. Applicant agrees with the Examiner that the abstract of Steube *et al.* teaches that dolastatin 10 and dolastatin 15 can inhibit the growth of leukemia cells while remaining non-cytotoxic to dividing cells or resting cells. However, at no point does the abstract of Stuebe *et al.* teach or disclose a peptide that preferentially binds to a surface of a cancerous blood cell and not to the surface of a non-cancerous blood cell or preferentially binds to a surface of a non-cancerous blood cell and not to the surface of a cancerous blood cell, with the proviso that the peptide does not bind to a tumor-associated antigen. As demonstrated by the enclosed Verdier-Pinard article, it appears that dolastatin 10 enters cells primarily through passive diffusion and not through cell-surface binding (Verdier-Pinard *et al.*, Molecular Pharmacology, 2000, Vol. 57, pp 180-187). Thus, the peptides disclosed by Stuebe *et al.* do not accomplish the inhibition of leukemia cells through preferentially binding to the surface of a cancerous blood cell and not to the surface of a non-cancerous blood cell or preferentially binding to the surface of a non-cancerous blood cell and not to the surface of a cancerous blood cell. Because Stuebe *et al.* fail to disclose or teach every element of claim 39, a *prima facie* case of anticipation has not been achieved. Applicant respectfully requests the Examiner withdraw the 35 U.S.C. § 102(b) rejection and allow claim 39 to issue. As claim 40 and 45 both depend from claim 39, these claims should also be allowed to issue.

In the Office Action, claims 39, 40, 41, and 45 were rejected under 35 U.S.C. § 102(b) as anticipated by Vidovic and Toral (Cancer Letters, 1998, Vol. 128, pp 127-135). Applicant respectfully traverses. Vidovic and Toral disclose a monoclonal antibody which binds to HLA-DR and induces selective apoptosis in malignant B-cells. The Examiner states that "it is noted that the HLA-DR is not a cancer associated antigen, and would not be expected to be immunogenic in the subject in which the malignant B cells originated or a syngenic individual." However, in the situations described by the Examiner, the monoclonal antibody would not be

expected to participate in cellular binding. Because claim 39 requires that the peptide preferentially bind to a cell surface, while not binding to a tumor-associated antigen, the antibody of Vidovic and Toral does not disclose or teach every limitation of the claim. Therefore, applicant respectfully requests that the Examiner withdraw the rejection of claim 39. Because claims 40, 41, and 45 depend directly or indirectly from claim 39, the 35 U.S.C. § 102(b) rejection of these claims should be withdrawn as well.

Claims 1-5, 7-17 and 21 were all rejected under 35 U.S.C. § 102(b) as anticipated by various STN database entries. The Examiner bases her anticipatory argument on the fact that the original claims disclosing the sequences of the present invention provided for the substitution of one or more amino acids without any functional limitation. Applicant respectfully submits that this argument has been rendered moot. First, claim 1 and claim 21 have been amended to provide for only the specific sequences listed. Thus, because none of the database entries submitted by the Examiner exactly match the sequences of the present invention, these entries cannot anticipate claims 1-5, 7-17, and 21. Nor do the database entries anticipate newly added claims 52 or 53. Claim 52 provides for an isolated polypeptide comprising a sequence selected from one of SEQ ID NOS.: 1-23 having one or more conservative amino acid substitutions; or SEQ ID NOS.: 26-31 having one or more conservative amino acid substitutions, wherein the one or more conservative amino acid substitutions do not decrease the biological activity of the isolated polypeptide as compared to a non-conservative amino acid substituted polypeptide. In order to anticipate claim 52, the STN sequences cited by the Examiner must not decrease the biological activity of the substituted peptides as compared to the peptides from which they derive. Because none of the STN database entries cited by the Examiner teach or suggest a peptide that does not have decreased biological activity as compared to the peptide in the current specification from which it could be derived, the Examiner has not made out a *prima facie* case of anticipation with regard to any of the claims currently pending in the application. For this reason, applicant respectfully requests the Examiner withdraw the 35 U.S.C. § 102(b) rejection and allow all of the currently pending claims to issue.

CONCLUSION

In light of the above amendments and arguments, applicant respectfully submits that the currently pending claims are in condition for allowance. The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

Respectfully submitted,

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